



Special Olympics South Dakota Powerlifting Handbook Version 1.3 (May 2022)



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Practice ideas, skill assessment and development, and rules can be found in the SOI Quick Start Guides and SOI rules for each sport at www.specialolympics.org/sports.aspx



SPECIAL OLYMPICS

SOUTH DAKOTA

POWERLIFTING HANDBOOK

SOSD OFFICIAL EVENTS

Bench Press

Deadlift

Squat

Double Combination (Bench Press, Deadlift)

Triple Combination (Squat, Bench Press, Deadlift)

Unified Powerlifting

POWERLIFTING GOVERNING RULES FOR COMPETITION

The Official Special Olympics Sports Rules for Powerlifting shall govern all Special Olympics competitions. As an international sports program, Special Olympics has created these rules based upon the International Powerlifting (IPF) rules for Powerlifting found at www.powerlifting-ipf.com.

IPF or National Governing Body (NGB) rules shall be employed except when they are in conflict with the Official Special Olympics Sports Rules for Powerlifting or Article 1. In such cases, the Official Special Olympics Sports Rules shall apply.

Refer to Article 1, <http://media.specialolympics.org/resources/sports-essentials/general/Sports-Rules-Article-1.pdf>, for more information pertaining to Codes of Conduct, Training Standards, Medical and Safety Requirements, Divisioning, Awards, Criteria for Advancement to Higher Levels of Competition, and Unified Sports.

EQUIPMENT

Bar and Specifications

- Distance between collars: 1.31 meters (4 ft 3 ½ in) at a maximum
- Total length outside the sleeves: 2.20 meters (7 ft 2 ¾ in) at a maximum
- Diameter of the bar: 28 mm (1 7/8 in) minimum; 29 mm (1 13/16 in) maximum
- Diameter of the largest disc: 45 cm (1 ft 5 ¾ in)
- Weight of largest disc: 25 kg (55 lbs)
- Weight of the bar: 20 kg (44 lbs). Bar with collars: 25 kg (55 lbs).
- The discs must be in the following range: 25 kg (55 lbs), 20 kg (44 lbs), 15 kg (33 lbs), 10 kg (22lbs), 5 kg (11 lbs), 2.5 kg (5.5 lbs), 1.25 kg (2.5 lbs).
- All discs must be clearly marked with their weight and must weigh within 0.25% of their face value.
- Collars shall always be used when discs are loaded on the bar.

Bench Specifications

- Standard Flat Level Bench
 - Length: no less than 1.22 meters
 - Width: 29-32 cm
 - Height: 42-45 cm
- Disabled Flat Level Bench
 - Length: 2.1 meters overall
 - Head end width: 30.5 cm
 - Height: 45-50 cm
 - Main body width: 61 cm

Footwear

- Long socks (up to the knee) must be worn for the deadlift.
- Sports type shoes e.g. trainers, powerlifting or weightlifting boots ONLY must be worn.
- No hiking or work boots allowed.
- The height of the heels shall not exceed 5 cm.

Belts

- A belt made of leather, vinyl, nylon or other similar non-stretch or non-metal (other than buckle and stud attachments material) may be worn on the outside of the suit.
- Dimensions: Width: 10 cm maximum. Thickness: 13 mm maximum.
- The belt may not encircle the body more than once.
- The belt shall not have additional padding.

Wrist Wraps

- Wrist wraps of a maximum width of 8 cm and a maximum length of 1 meter may be worn.
- A wrist wrap shall not extend beyond 10 cm above or 2 cm below the center of the wrist.
- In lieu of wrist wraps, wristbands not exceeding 10 cm in width may be worn.
- If wrist wraps are wrap-around style, with or without stitching, to form a sleeve, they may have Velcro patches not exceeding 30 cm in total length and 8 cm in width as well as a thumb loop. The total length of a wristband shall not exceed 50 cm. The thumb loop shall not be over the thumb during the competitive lift.

Knee Wraps

- Knee sleeves that do not exceed 30 cm in length or 7mm in thickness may be worn by the athlete.
- The referee shall reject knee wraps that have been put on the lifter using assistance of any method such as the use of plastic sliding, the use of lubricants and so on, OR with the assistance of any other person other than that which is typically required by the athlete for assistance with wrist wraps or with dressing on a daily basis (such as socks, shoes, etc).

Supportive Wraps

- Supportive equipment other than a belt or wrist wrap will not be worn in competition.

Non-supportive Wraps

- Wraps made of medical crepe or bandage and sweatbands do not require IPF approval.

Substances

- Baby powder, pool-hall chalk, liquid chalk, resin, talc or magnesium carbonate are the only substances that may be added to the body or attire.
- The use of oil, grease, or other lubricants is forbidden.

Modifications

- Lifting with a prosthesis is allowed and orthosis with shoes will be allowed.

DIVISIONING AND COMPETITION SCHEDULE

Divisions

- Athletes shall be placed in divisions according to gender, weight class, age, and ability
- SOSD will attempt to division athletes in no less than 4 lifters per division, whenever possible.
- SOSD Athletes must be a minimum of 14 years old to participate in powerlifting.
- Age divisions: Sub Junior- 14-18; Junior-19-23; Senior- 24-39; Master-40 and over

Weight Class Divisions

- Weight classes are a divisioning tool which groups athletes according to body weight which is a primary determinant of ability.
- This chart outlines the weight classes for both males and females.

Male		Female	
Kilograms	Pounds	Kilograms	Pounds
53 kg	111 lb	43 kg	95.75 lb
59 kg	130 lb	47 kg	103 lb
66 kg	145.5 lb	52 kg	114.50 lb
74 kg	163 lb	57 kg	125.50 lb
83 kg	183 lb	63 kg	139 lb
93 kg	205 lb	72 kg	158.5 lb
105 kg	231 lb	84 kg	185 lb
120 kg	264.5 lb	84+ kg	185.25+ lb
120+ kg	264.75+ lb		

- Please be sure that your athlete is in the appropriate weight class. For example, if a male athlete weighs 135 lbs, he will be in the 145 lb weight class. If a female athlete weighs 115 lbs, she will be in the 125.50 lb weight class.
- The IPF Formula should be used when there are not enough athletes to have at least three athletes per weight class or to place the combined score of an athlete and unified partner for Unified Powerlifting.
- The IPF formula produces a coefficient based on bodyweight.

Weigh-in

- An athlete's weight category must be indicated on the registration forms.
- All athletes must weigh-in prior to the 1st session of competition. 2nd session lifters must weigh in at this time also.
- All lifters will get their rack heights for bench press and squat during the weigh-in.
- Divisions may need to be adjusted as needed if the weight class differs from the qualifying weight class.
- Weigh-in will be done in private and the lifters will be allowed in one at a time. The weigh-in room will be locked and the persons allowed in it are the referees, the lifter and his/her coach/trainer.
- Each competitor can only have his/her official weight registered once. Only those heavier or lighter than the category limit are allowed to return to the scales within the limits of the hour allowed from the beginning of the weigh-in.
- An athlete weighing in above the upper limit for a weight class will be moved to the next heavier weight class.
- An athlete weighing in below the minimum limit for any weight class may, at the discretion of the Referee, be permitted to lift in the next lightest weight class if that competition is available. If competition in a lighter weight class is not available, the athlete will be permitted to lift outside the official competition and receive a participant's ribbon.

Rounds System

- Lifters will be divided into flights of no more than 14 lifters in each flight.
- In each flight, the lifter with the lightest attempt will lift first, and the weight loaded onto the bar will be progressively increased until everyone in the flight has lifted. The bar will then be unloaded and second attempts will be performed in the same fashion, followed by third attempts.
- In no case can the weight be reduced after the lifter has attempted to perform a lift with the announced weight. Then the next flight will lift.

RULES OF COMPETITION

General Rules and Modifications

- A coaches meeting will follow weigh-in to go over rules of the meet. There will be a brief warm-up period after the coaches meeting.
- Before the beginning of competitions, the referee and platform officials must check the weight of the bar and discs so that the total weight may be identical with that announced.
- The order of events is squat, bench press and dead lift.
- During any competition organized on a platform or stage, no one other than the lifter, referee, assigned medical personnel, recognized officials and competing lifter's coach shall be allowed around the platform or on the stage.
- An area on the stage to the left and behind the referee will be marked and may be occupied by the coach during the performance of his/her athlete's lift attempt. The coach may give manual signals.

- Commands for the Hearing Impaired/Deaf lifter in Bench Press. The referee shall reposition him/herself so as to be able to provide a visual movement of the arm, both to begin the lift and to rack the weight.
- Each athlete will have three attempts for each lift.
- Each competitor shall be allowed one minute from the calling of his/her name to the starting of the attempt. If the delay exceeds one minute, the attempt shall be forfeited. The clock shall stop when the lifter starts the lift properly. Lifters with anatomical (physical) disabilities (as stated prior to competition) will be granted extra time, up to 3 minutes if needed.
- First round attempts should be submitted at weigh-ins.
- A lifter and/or his/her coach must submit his 2nd or 3rd attempts within in one minute of completing his preceding attempt. The one minute will begin from the time the lights are activated. If no weight is submitted within the one-minute time allowance, the lifter will be granted a 2.5 kg increase on his next attempt. Should the lifter have failed his previous attempt, and not submitted a weight for a further attempt within the one-minute time allowance, then the bar will be loaded to the failed weight.
- A lift must be declared a NO lift and the lifter must be disqualified if, in the opinion of the referee/judges, the weights are dropped intentionally.
- There will be three referees on the lifting platform. A lifting attempt must receive a minimum of two out of three white flags in order to be a successful attempt. Two or more red flags will constitute an unsuccessful attempt.
- Scoring of the events shall be the maximum weight lifted for each event and a total combination maximum weight for combination events.
- The IPF Formula is presented, in kilograms (kg), as a table of coefficients. Each lifter has a coefficient determined by bodyweight (BW). To determine the placing of lifters, multiply each lifter's coefficient by his/her total. The resulting factor is his/her IPF Formula Total. The lifter having the highest IPF Formula Total is awarded first place, the second highest is awarded 2nd place, etc.

EVENT SPECIFIC RULES AND MODIFICATIONS

Bench Press

- The lifter must assume the following position on the bench, and maintain this position during the entire lift: the head and trunk (including buttocks) must be in contact with the surface of the bench, and the feet must be on the floor or plates. To achieve firm footing, flat-surfaced discs or blocks (not exceeding 30 cm in height) may be used. Lifters with physical disabilities shall be given the opportunity to use either the standard or the special bench for disabled lifters. The hands must grip the bar with the thumbs around grip, thus locking the bar safely in the hands. The use of the reverse grip is forbidden.
- Lifters with physical disabilities may be strapped to the bench from the ankles to the hips using a strapping belt not to exceed 10 cm in width.
- After removing the bar from the racks or receiving it from the spotters/loaders, the lifter shall wait with elbows locked for the referee's signal. The signal shall be given as soon as the lifter is motionless and the bar properly positioned at full arms extension.

- Not more than four and not fewer than two official spotters/loaders shall assist in the competition areas.
- The spacing of the hands shall not exceed 81 cm (2 ft 8 in), measured between the index fingers.
- Athletes who are anatomically unable to fully lockout a bench press must have a certified coach state so at the weigh-in. A medical certificate should accompany the request. No changes in proper lifting techniques can be made for the lifter after weigh-in.
- A referee's signal shall consist of a downward movement of the arm together with the audible command: "Start".
- After receiving the start signal, the lifter must lower the bar to the chest and hold it motionless. The referee shall give the audible signal "Press", at which time the bar shall be pressed upward with an even extension of the arms. When held motionless in this position, a visible signal consisting of a backward movement of the arm together with the audible command "Rack" shall be given. In case of a hearing impaired lifter, tactile signals may be employed.
- In this lift, the referees shall position themselves at the best vantage points.
- Causes for disqualification in the bench press
 - Failure to observe the referee's signals at the commencement and completion of the lift
 - Any change in elected position after the "Start" signal: i.e., raising movement of the head/shoulders, buttocks or feet from their original points of contact with the bench or floor, or lateral movement of the hands on the bar. At no point may the athlete's feet come in contact with the bench or its supports
 - Any heaving or bouncing of the bar from the chest after it has been motionless on the chest
 - Any pronounced/exaggerated uneven extension of the arms during the lift
 - Any downward movement of the bar in the course of being pressed out
 - Failure to press the bar to full arms extension (full arms length) at the completion of the attempt
 - Contact with the bar or lifter by the spotters/loaders between referee's signals
 - Deliberate contact between the bar and the bar-rest uprights during the lift to make the lift easier
 - Failure to comply with any of the requirements contained in the general description of the lift

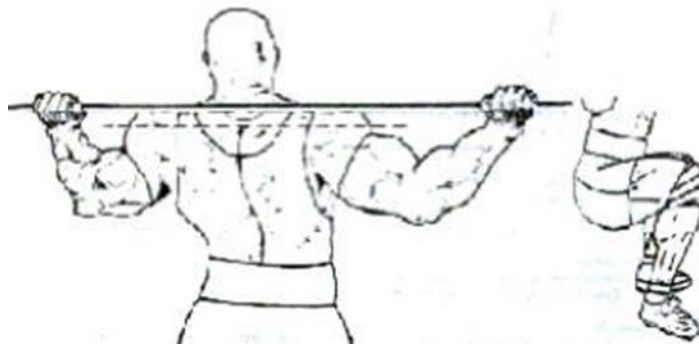
Deadlift

- The bar must be positioned horizontally in front of the lifter's feet, gripped with an optional grip in both hands and lifted without downward movement until the lifter is standing erect. (Grip option: when gripping the bar, either the backs of both hands face front or the back of one hand and the palm of the other hand face front in what is called the over and under grip).
- The lifter shall face the front of the platform.
- On completion of the lift, the knees shall be locked in the straight position and the shoulders should be held in an erect position (not forward or rounded). The shoulders do not have to be thrust back past an erect position; however, if they are thrust back in that manner, and all other criterion are acceptable, the lift shall be accepted.

- The referee's signal shall consist of a downward movement of the hand and the audible command "Down". The signal will not be given until the bar is held motionless and the lifter is in the completed position as determined by the referee.
- Any attempts to raise the bar or deliberate attempts to lift the bar shall count as an attempt.
- Causes for disqualification in the dead lift
 - Any downward movement of the bar or either end of the bar during the lift
 - Failure to stand erect with the shoulders in an erect position
 - Failure to lock the knees straight at the completion of the lift
 - Supporting the bar on the thighs during the performance of the lift. NOTE: Supporting the bar on the thighs may include also a secondary bending of the knees and dropping of the hips.
 - Lowering the bar before receiving the referee's signal
 - Allowing the bar to return to the platform without maintain control with both hands
 - Failure to comply with any of the requirements contained in the general description of the lift

Squat

- An athlete with Down syndrome who has been diagnosed with Atlanto-axial Instability may not participate in the back squat lift in powerlifting.
- The lifter shall assume an upright position with the top of the bar not more than 3 cm below the top surface of the anterior deltoids. The bar shall be held horizontally across the shoulders with the hands and fingers gripping the bar (not the collars) and the feet flat on the platform with the knees locked.
- The use of a wedge at the heels or toes shall be forbidden.
- After removing the bar from the racks, the lifter must move backward to establish his/her position. He/she shall wait in this position for the referee's signal. The signal shall be given as soon as the lifter is motionless and the bar properly positioned. If mechanical racks that withdraw are used, the lifter must remove the barbell from the racks before they are withdrawn and wait motionless for the referee's signal. The signal shall consist of a downward movement of the arm and audible command "Squat".
- Upon receiving the referee's signal, the lifter must bend and lower the body until the top surfaces of the legs at the hip joints are lower than the tops of the knees.
- Illustration below showing proper depth in squat.



- The lifter must recover at will, without double bouncing or any downward movement of the body or bar, to an upright position. Once in an upright position with knees locked, the lifter will wait for the referee's signal. When the lifter is motionless, the referee will give the signal to replace the bar.
- The signal to replace the bar will consist of a backward motion of the hand and the audible command "Rack". The lifter must then make a bona fide attempt to return the bar to the racks.
- The lifter must face the front of the platform.
- The lifter shall not hold the collars, sleeves or discs at any time during the performance of the lift. However, the sides of the hands, gripping the bar, may be in contact with the inside surface of the inner collars.
- Not more than five and not fewer than two spotters/loaders shall be on the platform at any given time.
- The lifter may enlist the help of the spotters/loaders in removing the bar from the racks, and replacing the bar in the racks at the conclusion of the lift. Once the bar has cleared the racks, the spotters/loaders shall not assist the lifter any further.
- In the event of a spotter error or equipment failure, the referee may grant the lifter an additional attempt at the same weight.
- Causes for Disqualification in the Squat
 - Failure to observe the referee's signals at the commencement or completion of the lift
 - Any change of position of the hands on the bar
 - Double bouncing or more than one recovery attempt at the bottom of the lift
 - Failure to assume an upright position with knees locked at the commencement and completion of the lift
 - Any shifting of the feet laterally, backward, or forward during the performance of the lift.
 - Failure to bend the knees and lower the body until the top surfaces of the legs at the hip joints are lower than the top of the knees.
 - Changing the position of the bar across the shoulders after the commencement of the lift
 - Contact of the bar or the lifter by the spotters/loaders between the referee's signals
 - Contact of the elbows or upper arms with the legs
 - Failure to make a bona fide attempt to return the bar to the racks
 - Any dropping or dumping of the bar after the completion of the lift
 - Failure to comply with any of the requirements contained in the general description of the lift.

Combination

- The Double Combination event includes the bench press and deadlift.
- The Triple Combination event includes the bench press, deadlift and squat.
- An athlete's final score is calculated by adding together the maximum weight he/she successfully lifted in the bench press and deadlift (double combination), or the squat, bench press and deadlift (triple combination).
- Three unsuccessful attempts in any of the lifts will automatically eliminate the lifter from the Combination events.

Unified Sports-Powerlifting

This division will be composed of Special Olympics athletes and their Unified partners. While there should be an attempt to match athlete and partner teams by weight and ability, this is not always possible or necessary when each partner and athlete are provided a coefficient from the Wilkes Formula found in the Special Olympics rules (see pages 13-19 in this document). Athlete and partner competition and scoring will be based on the following:

- Athletes are allowed to participate in Unified Powerlifting OR traditional powerlifting but are not allowed to participate in both competitions. They must choose one (but can compete in up to 4 events in each competition).
- Each team includes a Special Olympics athlete and a Unified Partner.
- Each athlete and partner compete against other athlete and partner teams.
- Each athlete and partner are scored based on combined weight lifted. An example is: Athlete (Team A) squats 150 kgs, bench presses 100 kgs and deadlifts 200 kgs for a total of 450 kgs. Unified Partner (Team A) squats 175 kgs, bench presses 125 kgs and deadlifts 250 kgs for a total of 550 kgs. Their combined weight lifted total is 1000 kgs.
- They are competing against an Athlete (Team B) who squats 185 kgs, bench presses 105 kgs and deadlifts 205 kgs for a total of 495 kgs. That athlete's partner (Team B) squats 165 kgs, bench presses 110 kgs and deadlifts 255 kgs for a total of 530 kgs. Their combined weight lifted total is 1025 kgs.
- In order to take away any advantage of bodyweight any athlete and partner might have, a formula (IPF coefficient) is applied to each of athlete and partner bodyweight to put them on a level playing field. In the case above, athlete (Team A) weighs 60 kg and partner (Team A) weighs 95 kgs. Athlete (Team B) weighs 70 kgs and partner (Team B) weighs 110 kgs.
- Each athlete and partner team places are determined based upon combined IPF coefficient which is their bodyweight times combined weight lifted.
- Competitions may include or be exclusively two lifts (bench press and deadlift) or three lifts (squat, bench press, deadlift). In each case, the same scoring process as outlined above would apply.
- While most athlete and partner teams will be gender specific, mixed or coed teams may be included in a specific division (e.g. male athlete and female partner team competing against other male athlete and female partner teams OR female athlete and male partner teams competing against other female athlete and male partner teams).
- For IPF Unified Powerlifting competitions, the scoring process outlined above would also apply with the only requirements being the athlete and partner are IPF members.

AWARDS CRITERIA

- Individual awards will be presented in each of the following events.
 - Bench Press
 - Deadlift
 - Squat
 - Double Combination
 - Triple Combination
 - Unified Bench Press
 - Unified Deadlift
 - Unified Squat
 - Unified Double Combination
 - Unified Triple Combination
- Medals are presented for 1st-3rd place while ribbons are presented for 4th-8th place.
- Awards are presented at the conclusion of each session. Those competing in the morning session will receive their awards at the conclusion of the morning session and those competing in the afternoon session will receive their awards at the conclusion of that session.

SPORTSMANSHIP

Good sportsmanship is both the coaches' and athletes' commitment to fair play, ethical behavior and integrity. In perception and practice, sportsmanship is defined as those qualities which are characterized by generosity and genuine concern for others. Below we highlight a few focus points and ideas on how to teach and coach sportsmanship to your athletes. Lead by example.

Competitive effort

- Put forth maximum effort during each event.
- Practice the skills with the same intensity as you would perform them in competition.
- Always finish a game/event. Never quit.

Fair play at all times

- Always comply with the rules.
- Demonstrate sportsmanship and fair play at all times.
- Respect the decision of the officials at all times.

KILO CONVERSION TABLE

To convert kilos to pounds, multiply kilos by 2.2046. Rules state that poundages shall be rounded off by reducing to the nearest quarter, i.e., 107.5 kilos multiplied by 2.2046 equals 236.99450. The poundage then becomes 236-3/4 rather than 237.

KILOS	POUNDS	KILOS	POUNDS	KILOS	POUNDS	KILOS	POUNDS
27.5	60.5	145	319.5	260	573	377.5	832
30	66	147.5	325	262.5	578.5	380	837.5
32.5	71.5	150	330.5	265	584	382.5	843-1/4
35	77	152.5	336	267.5	589.5	385	848-3/4
37.5	82.5	155	341.5	270	595	387.5	854-1/4
40	88	157.5	347	272.5	600-3/4	390	859-3/4
42.5	93.5	160	352.5	275	606-1/4	392.5	865-1/4
45	99	162.5	358	277.5	611-3/4	395	870-3/4
47.5	104.5	165	363-3/4	280	617-1/4	397.5	876-1/4
50	110	167.5	369-1/4	282.5	622-3/4	400	881-3/4
52.5	115.5	170	374-3/4	285	628-1/4	402.5	887-1/4
55	121-1/4	172.5	380-1/4	287.5	633-3/4	405	892-3/4
57.5	126-3/4	175	385-3/4	290	639-1/4	407.5	898-1/4
60	132-1/4	177.5	391-1/4	292.5	644-3/4	410	903-3/4
62.5	137-3/4	180	396-3/4	295	650-1/4	412.5	909-1/4
65	143-1/4	182.5	402-1/4	297.5	655-3/4	415	914-3/4
67.5	148-3/4	185	407-3/4	300	661-1/4	417.5	920-1/4
70	154-1/4	187.5	413-1/4	302.5	666-3/4	420	925-3/4
72.5	159-3/4	190	418-3/4	305	672-1/4	422.5	931-1/4
75	165-1/4	192.5	424-1/4	307.5	677-3/4	425	936-3/4
77.5	170-3/4	195	429-3/4	310	683-1/4	427.5	942-1/4
80	176-3/4	197.5	435-1/4	312.5	688-3/4	430	947-3/4
82.5	181-3/4	200	440-3/4	315	694-1/4	432.5	953-1/4
85	187-1/4	202.5	446-1/4	317.5	699-3/4	435	959
87.5	192-3/4	205	451-3/4	320	705-1/4	437.5	964.5
90	198-1/4	207.5	457-1/4	322.5	710-3/4	440	970
92.5	203-3/4	210	462-3/4	325	716-1/4	442.5	975.5
95	209-1/4	212.5	468-1/4	327.5	722	445	981
97.5	214-3/4	215	473-3/4	330	727.5	447.5	986.5
100	220-1/4	217.5	479.5	332.5	733	450	992
102.5	225-3/4	220	485	335	738.5	452.5	99705
105	231-1/4	222.5	490.5	337.5	744	455	1003
107.5	236-3/4	225	496	340	749.5	457.5	1008.5
110	242.5	227.5	501.5	342.5	755	460	1014
115	253.5	230	507	345	760.5	462.5	1019.5
117.5	259	232.5	512.5	347.5	766	465	1025
120	264.5	235	518.555	350	771.5	467.5	1030.5
122.5	270	237.5	523.5	352.5	777	470	1036
125	275.5	240	529	355	782.5	472.5	1041.5
127.5	281	242.5	534.5	357.5	788	475	1047
130	286.5	245	540	360	793.5	477.5	1052.5
132.5	292	247.5	545.5	362.5	799	480	1058
135	297.5	250	551	367.5	810	482.5	1063.5
137.5	303	252.5	556.5	370	815.5	485	1069
140	308.5	255	562	372.5	821	487.5	1074.5
142.5	314	257.5	567.5	375	826.5	490	1080-1/4

KILO CONVERSION TABLE *continued*

KILOS	POUNDS	KILOS	POUNDS	KILOS	POUNDS	KILOS	POUNDS
492.5	1085-3/4	622.5	1372-1/4	750	1653-1/4	877.5	1934-1/2
495	1091-1/4	625	1377-3/4	752.5	1658-3/4	880	1940
497.5	1096-3/4	627.5	1383-1/4	755	1664-1/4	882.5	1945-1/2
500	1102-1/4	630	1388-3/4	757.5	1669-3/4	885	1951
502.5	1107-3/4	632.5	1394-1/4	760	1675-1/4	887.5	1956-1/2
505	1113-1/4	635	1399-3/4	762.5	1681	890	1962
510	1124-1/4	637.5	1405-1/4	765	1686-1/2	892.5	1967-1/2
512.5	1129-3/4	640	1410-3/4	767.5	1692	895	1973
515	1135-1/4	642.5	1416-1/4	770	1697-1/2	897.5	1978-1/2
517.5	1140-3/4	645	1421-3/4	772.5	1703	900	1984
520	1146-1/4	647.5	1427-1/4	775	1708-1/2	902.5	1989-1/2
522.5	1151-3/4	650	1432-3/4	777.5	1714	905	1995
525	1157-1/4	652.5	1438-1/2	780	1719-1/2	907.5	2000-1/2
527.5	1162-3/4	655	1444	782.5	1725	910	2006
530	1168-1/4	657.5	1449-1/2	785	1730-1/2	912.5	2011-1/2
532.5	1173-3/4	660	1455	787.5	1736	915	2017
535	1179-1/4	662.5	1460-1/2	790	1741-42	917.5	2022-1/2
537.5	1184-3/4	665	1466	792.5	1747	920	2028
540	1190-1/4	667.5	1471-1/2	795	1752-1/2	922.5	2033-1/2
542.5	1195-1/4	670	1477	797.5	1758	925	2039-1/4
545	1201-1/2	672.5	1482-1/2	800	1763-1/2	927.5	2044-3/4
547.5	1207	675	1488	802.5	1769	930	2050-1/4
550	1212-1/2	677.5	1493-1/2	805	1774-1/2	932.5	2055-3/4
552.5	1218	680	1499	807.5	1780	935	2061-1/4
555	1223-1/2	682.5	1504-1/2	810	1785-1/2	937.5	2066-3/4
557.5	1229	685	1510	815	1791	940	2072-1/4
560	1234-1/2	687.5	1515-1/2	815	1796-1/2	942.5	2077-3/4
562.5	1240	690	1521	817.5	1802-1/4	945	2083-1/4
565	1245-1/2	692.5	1526-1/2	820	1807-3/4	947.5	2088-3/4
570	1256-1/2	695	1532	822.5	1813-1/4	950	2094-1/4
572.5	1262	697.5	1537-1/2	825	1818-3/4	952.5	2099-3/4
575	1267-1/2	700	1543	827.5	1824-1/4	955	2105-1/4
577.5	1273	702.5	1548-1/2	830	1829-3/4	957.5	2110-3/4
580	1278-1/2	705	1554	832.5	1835-1/4	960	2116-1/4
582.5	1284	710	1565-1/4	835	1840-3/4	962.5	2121-3/4
585	1289-1/2	712.5	1570-3/4	837.5	1846-1/4	965	2127-1/4
587.5	1295	715	1576-1/4	840	1851-3/4	967.5	2132-3/4
590	1300-1/2	717.5	1581-3/4	842.5	1857-1/4	970	2138-1/4
592.5	1306	720	1587-1/4	845	1862-3/4	972.5	2143-3/4
595	1311-1/2	722.5	1592-3/4	850	1873-3/4	975	2149-1/4
597.5	1317	725	1598-1/4	852.5	1879-1/4	977.5	2154-3/4
600	1322-3/4	727.5	1603-3/4	855	1884-3/4	980	2160-1/2
602.5	1328-1/4	730	1609-1/4	857.5	1890-1/4	982.5	2166
605	1333-3/4	732.5	1614-3/4	860	1895-3/4	985	2171-1/2
607.5	1339-1/4	735	1620-1/4	862.5	19.1-1/4	990	2182-1/2
610	1344-3/4	737.5	1625-3/4	865	1906-3/4	992.5	2188
612.5	1350-1/4	740	1631-1/4	867.5	1912-1/4	995	2193-1/2
615	1355-3/4	742.5	1636-3/4	870	1918	997.5	2199
617.5	1361-1/4	745	1642-1/4	872.5	1923-1/2	1000	2204-1/2
620	1366-3/4	747.5	1647-3/4	875	1929		